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them. Under these conditions, Mr. Herschel observes, the phenomenon may admit of explanation, from what we already know of the passage of electricity through conductors, and the high attractive and repulsive powers of the two electricities *inter se*. A body so highly positive as potassium, present in the mercury, may, for instance, have its natural electrical state exalted by its vicinity to the positive pole; and being thus repelled, may take the only course the resistance of the metal on the one hand, and attraction of cohesion on the other, will permit, viz. along the surface, to recede from the positive pole; it may even act as a carrier to the positive electricity, which may adhere to it too strongly to be transmitted through the mercury, and when arrived at the opposite side of the globule may there, by the influence of the opposite pole, lose its exalted electrical state. Such an explanation, however, is not without its difficulties; and although another is open to us, that of considering the action which takes place at the common surface of two unequally conducting media as dependent upon a new power of the electric current, bearing some analogy to magnetic action, yet this, in the present state of the investigation, must be regarded not only as a bold, but vague hypothesis.

Experiments and Observations on the Development of Magnetical Properties in Steel and Iron by Percussion:—Part II. By William Scoresby, Jun. F.R.S.E. &c. Communicated by Sir Humphry Davy, Bart. Pres. R.S. Read January 29, 1824. [*Phil. Trans.* 1824, p. 197.]

After adverting to the general results of his former inquiries, the author observes that his principal objects on the present occasion were to endeavour, by auxiliary rods of iron, to increase the degree of magnetism; and to ascertain on what circumstances, as to the magnitude of the iron rods, and the quality, size, and temper of the steel wires, the utmost success of the method depends.

He formerly used a single iron rod, upon which the steel bars were hammered, both being in a vertical position. He now places the steel wire between two rods of iron, and subjecting it, through the medium of the upper rod, to percussion, derives the advantage of the magnetism of both rods of iron acting at the same time upon both its poles. The rods he used were of the respective lengths of three and one foot, and an inch diameter; and the upper end of the larger rod and the lower one of the smaller rod were made conical, there being an indentation in each to receive the ends of the steel wire. Some magnetism was then elicited by percussion in the larger rod, and the steel wire being properly placed between its upper extremity and the lower one of the small rod, the upper end of the latter was hammered, and magnetism thus communicated to the wire; whilst the lower rod, receiving some influence from the percussion, performed a similar office. The author calls this mode of proceeding, the *com-*

pound process, to distinguish it from the mere hammering of the wire upon the rod, as practised by him formerly, and which he terms the *simple process*. He then enters into extended details of his several experiments, of which the following are the principal results: first, that the *compound process* is more effectual in the production of magnetism than the *simple one*, though the ratio of augmentation does not appear determinate. In one experiment, the maximum effect of the simple process was an attractive force capable of lifting between 186 and 246 grains, while the *compound process* augmented the lifting power to 326 grains. In another, the *simple process* gave a lifting power of 246 grains, the *compound* of 345 grains. Moreover, the efficacy of the compound process is much less manifest upon long than short wires, and is greatly impaired by diminishing the size of the rods.

In respect to the influence of the temper of the wire upon the degree of magnetism developed, Mr. Scoresby found that the softer the wire the more susceptible it became of this magnetic condition.

The author concludes this paper with some theoretical remarks respecting the influence of percussion in disposing the particles of iron to acquire and retain magnetism, which he thinks may tend to explain some otherwise obscure phenomena; and which seem to render it probable that the process of percussion may be applied, in connexion with other modes of magnetizing, for giving increased power to magnets.

On Semi-decussation of the Optic Nerves. By William Hyde Wollaston, M.D. V.P.R.S. Read February 19, 1824. [*Phil. Trans.* 1824, p. 222.]

In the human brain, the optic nerves, after passing forward to a short distance from their origin in the thalami, become incorporated; and from the point of union two nerves are sent off, one to each eye. To this united portion the term Decussation has been applied, under the supposition that though the fibres do intermix, they still continue onward in their original direction; and that those from the right side cross over wholly to supply the left eye, while the right eye is similarly supplied by fibres from the left thalamus. Anatomists have considered this opinion as confirmed, by the circumstance of the nerves actually crossing each other as two perfectly distinct cords in some fish; the author, however, from a species of blindness under which he has more than once suffered, concludes that a different distribution of the nerves takes place in the human subject. This peculiar state of vision consisted in seeing only half of every object, the loss of sight being in both eyes towards the left, and of short duration only. In reflecting upon this subject, a certain arrangement of the optic nerves, not consistent with the generally received hypothesis of their decussation, occurred to him. Since the corresponding points of the two eyes, he observes, sympathize in disease,